

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of the Claims:

What is claimed:

1. (Previously Presented) A composition comprising a DNA repair modulator that specifically binds to the sequence KKKYIEIRKEAREAANGDSDGPSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining.
2. (Original) The composition of claim 1, wherein the DNA repair modulator comprises a polypeptide.
3. (Previously Presented) The composition of claim 2, wherein the polypeptide comprises the sequence QVKLQESGAELVKPGASVKLSCKAFDYFTTTYDINWIKQRPQGGLWIGWIY PGSGNKNKYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYW GQGTTVTVSSDIETQSPSSMYASLGERVTITCKASQDINSYLSWFFQKPKGKSPKTLIYRANRLVDGVPSRFSGSGSGQDYSLTISSLEYEDMGIIYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).
4. (Previously Presented) The composition of claim 1, wherein said sequence is located on a DNA-PKcs and said DNA repair modulator inhibits less than 50% of DNA-PKcs enzymatic activity.
5. (Original) A single chain antibody that specifically binds to DNA-PKcs in a region outside of the catalytic domain, wherein the single chain antibody includes complementarity determining regions FTTYDIN (SEQ. ID NO.:18), WIYPGSGNKNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20), KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ. ID NO.:23), in an immunoglobulin framework.
6. (Currently Amended) A ~~pharmaceutical~~ composition comprising a DNA repair modulator, a prodrug thereof, or combination thereof, wherein the modulator inhibits DNA repair by specifically interacting with DNA-PKcs outside of the DNA-PKcs catalytic domain, said DNA repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYFTTTYDINWIKQRPQGGLWIGWIY

GSGNNYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGO
GTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQKPGKSPKTLIYRANR
LVDGVPSRFSGSGSQDYSLTISSEYEDMGIIYCLQYDELPLTFGAGTKLEIKR (SEQ.
ID NO.:17).

7. (Cancelled)

8. (Currently Amended) The ~~pharmaceutical~~ composition of claim 6, wherein the DNA repair modulator interacts with a region of DNA-PKcs having the sequence KKYIEIRKEAREEAANGSDGPSYM (SEQ. ID NO.:16), or a portion thereof.

9. (Currently Amended) The ~~pharmaceutical~~ composition of claim 6, wherein the DNA repair modulator inhibits DNA end joining.

10. (Cancelled)

11. (Currently Amended) The ~~pharmaceutical~~ composition of claim 6, wherein the DNA repair comprises a repair of a double-strand break.

12. (Currently Amended) The ~~pharmaceutical~~ composition of claim 6, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

13. (Currently Amended) A ~~pharmaceutical~~ composition comprising a DNA repair modulator, a prodrug thereof, or a combination thereof, wherein the modulator interacts with a DNA repair polypeptide and sterically inhibits the DNA repair polypeptide, said DNA repair modulator comprising a single chain antibody, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKRPGQGLWIGWIYPGSGNNY NEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGOGTTVTV SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQKPGKSPKTLIYRANRLVDGVP SRFSGSGSGQDYSLTISSEYEDMGIIYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

14. (Cancelled)

15. (Currently Amended) The ~~pharmaceutical~~ composition of claim 13, wherein the DNA repair modulator interacts with a region of DNA-PKcs.

16. (Currently Amended) The ~~pharmaceutical~~ composition of claim 15, wherein the region of DNA-PKcs include the sequence KKYIEIRKEAREEAANGSDSGPSYM (SEQ. ID. NO. 16) or a portion thereof.

17. (Currently Amended) The ~~pharmaceutical~~ composition of claim 13, wherein the DNA repair modulator inhibits DNA end joining.

18. (Cancelled)

19. (Currently Amended) The ~~pharmaceutical~~ composition of claim 13, further comprising a pharmaceutically acceptable carrier, excipient, or diluent.

20-26 (Cancelled)

27. (Previously Presented) A single chain antibody comprising an organelle localization signal sequence, wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide, said single chain antibody comprising the sequence QVKLQESGAELVKPGASVKLSCKAFDYTFTTYDINWIKRPGQGLWIGWIYPGSGNNY NEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGGTTVTV SSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQKPGKSPKTLIYRANRLVDGVP SRFSGSGSGQDYSLTISSLEYEDMGIIYCLQYDELPLTFGAGTKLEIKR (SEQ. ID NO.:17).

28. (Original) The single chain antibody of claim 27, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.

29. (Original) The single chain antibody of claim 27, wherein the DNA repair polypeptide is DNA-PKcs.

30. (Original) The single chain antibody of claim 29, wherein the single chain antibody binds DNA-PKcs in a region outside the catalytic domain.

31. (Previously Presented) The single chain antibody of claim 30, wherein the region includes the sequence KKYIEIRKEAREEAANGSDSGPSYM (SEQ. ID NO.:16) or a portion thereof.

32. (Previously Presented) A single chain antibody comprising a protein transduction domain wherein the single chain antibody inhibits DNA repair by binding to a DNA repair polypeptide

and comprises the sequence
QVKLQESGAELVKPGASVKLSCKAFDYFTTTYDINWIKQRPQGGLWIGWYYP
GSGNNYNEKFKGKATLTADKSSRAAYMHLSSLTSEDSAVYFCAGGPLNMTGFDYWGQ
GTTVTVSSDIELTQSPSSMYASLGERVTITCKASQDINSYLSWFQKPKGKSPKTLIYRANR
LVDGVPSRFSGSGSGQDYSLTISSEYEDMGIIYYCLQYDELPLTFGAGTKLEIKR (SEQ.
ID NO.:17) or includes the complementarity determining regions FTTYDIN (SEQ ID NO.: 18),
WIYPGSGNNKYNEKFKG (SEQ. ID NO.:19), GPLNMTGFDY (SEQ. ID NO.:20),
KASQDINSYLS (SEQ. ID NO.:21), RANRLVD (SEQ. ID NO.:22), and LQYDELPLT (SEQ.
ID NO.:23), in an immunoglobulin framework.

33. (Cancelled)

34. (Previously Presented) The single chain antibody of claim 32, wherein the DNA repair polypeptide comprises DNA-PKcs.

35. (Previously Presented) The single chain antibody of claim 34, wherein the single chain antibody binds to a region of the DNA-PKcs polypeptide outside the catalytic domain.

36. (Previously Presented) The single chain antibody of claim 35, wherein the single chain antibody binds to a region including the sequence KKYIEIRKEAREANGSDGPSYM (SEQ. ID NO.:16) or a portion thereof.

37. (Currently Amended) A pharmaceutical composition comprising a single chain antibody that binds to a polypeptide comprising the sequence KKKYIEIRKEAREANGSDGPSYM (SEQ. ID NO.:16), or a portion thereof, and inhibits non-homologous end joining.

38. (Currently Amended) The A-pharmaceutical composition of claim 37, wherein the single chain antibody comprises a protein transduction domain and an organelle localization signal.

39. (Currently Amended) The pharmaceutical composition of claim 38, wherein the organelle localization signal is selected from the group consisting of a nuclear localization signal and a chloroplast localization signal.

40-60 (Cancelled)